

## ABSTRACT OF THE INVENTION

A point-to-multipoint passive optical network transmits downstream data from an optical line terminal (OLT) to multiple optical network units (ONUs) in variable-length packets and upstream data from the ONUs to the OLT in variable-length  
5 packets utilizing time division multiplexing to avoid transmission collisions. In an embodiment, the variable-length downstream packets and the variable-length upstream packets are formatted according to IEEE 802.3. In an embodiment, the length of the variable-length downstream and upstream packets is related to the  
10 length of Internet protocol (IP) datagrams carried within the packets.

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